Issues in Agriculture

The Newsletter about Integrated Pest Management for the El Paso Valley

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Texas AgriLife Extension El Paso County: http://elp.tamu.edu/ **Pecan IPM Pipe:** http://pecan.ipmpipe.org/ **TPMA** www.tpma.org/

Announcements

- Due to ever-increasing costs of sending this newsletter using the postal mail, the IPM newsletter will be delivered through email only. Please provide us with your email address.
- **Texas Pecan Growers Association Annual Conference & Trade Show:** July 13-16, 2014. Embassy Suites, San Marcos, TX. Contact TPGA, 979-846-3285 or pecans@tpga.org.
- Free webinar! **Get TickSmart: 10 Things to Know, 5 Things to Do.** To stay *TickSafe* and disease-free, there are 10 things you must know about ticks these days and 5 top *TickSmart* actions you can and should take. The Get *TickSmart* campaign hopes to fast-track your access to knowledge and resources that empower you to be proactive and protected. Friday April 4 at noon MST. To attend as guest go to: https://connect.extension.iastate.edu/fireant.
- The Texas Ag Forum will feature an **overview of the 2014 Farm Bill**. This discussion is scheduled on April 10 (8:00 AM – 5:00 PM) at the Hilton Austin Airport (9515 Hotel Drive, Austin, TX 78719). The event will bring together producers, commodity and farm organization leaders from across the state. Fruits/vegetables, dairy, and cotton will receive special attention. View the agenda at http://www.afpc.tamu.edu/links/DraftSchedule.pdf. Advanced registration is $125 through the Texas Agricultural Cooperative Council. Same-day registration is $150. To pre-register, call (512) 450-0555.
- New **cotton root rot app** is now available: Experts with the Texas A&M AgriLife Extension Service and Angelo State University (the App developers) said that this tool will aid cotton producers in making their decisions to manage cotton root rot in their fields. Producers who utilize Apple mobile devices, iPhones and iPads, can download the app from Apple's iTunes Store www.apple.com, while android device users can download the app from the Google Play Store https://play.google.com. A spreadsheet version of the decision aid can be found at http://sanangelo.tamu.edu/extension/west-central-agricultural-economic/analytical-tools/. All three versions of this producer decision aid are free to download and use.

FARM BILL:

"Dr. Joe Outlaw, Co-Director of the Agricultural and Food Policy Center at Texas A&M University and an AgriLife Extension economist in College Station, said the new farm bill repeals direct payments, counter-cyclical payments, and Average Crop Revenue Election (ACRE). Producers now must choose between Agriculture Risk Coverage and Price Loss Coverage for their program crops. Producers are also going to have the opportunity to reallocate their base acres to crops planted on the farm at any time during the 2009 to 2012 crop years. He said that all cotton base acres are now generic base acres." You can read the original article at TinyURL.com/q6eajsl. For information on the Farm Bill visit "The Agricultural and

Food Policy Center" website at http://www.afpc.tamu.edu/. You may also call Dr. Joe Outlaw at 979-845-3062 or send him an email joutlaw@tamu.edu

PECAN:

This is the time to order pheromone traps and lures for **pecan nut casebearer** (PNC). Usually, I place my PNC traps in the field by the middle of April. Considering the fact that the recent winter was fairly mild in El Paso, I plan to set the PNC traps a bit earlier this year. Perhaps the second week of April may be the ideal time this year. The goal is to place the traps before the first moths start flying. When you observe two consecutive nights with PNC moth captures, you should go to http://pecan.ipmpipe.org/ to see maps showing PNC activity and forecasts. This will allow you to determine when to scout for eggs and inspect for nut entry. On this website, you will find insecticide options in case action thresholds are met. You can also become a Cooperator and enter your own pest data.

Pecan nut casebearer moth on pecan nutlet

Recently, some El Paso pecan growers suggested monitoring the third generation of PNC because they observed unusually high, late PNC damage to nuts in 2013. Traditionally, we have monitored the first and second PNC generations only and have considered the damage by the third generation as minor. Several possible theories to explain this damage have been offered. One of the most plausible explanations is the possibility that PNC moths are flying from untreated pecan orchards across the international border. Responding to this concern, Dr. Jaime Iglesias and I are discussing with Mexican farmers and colleagues to implement a season-long PNC monitoring program in the Chihuahuan pecan orchards in close proximity to the border. This idea has been well received on both sides of the border. Also, Bill Ree and Dr. Mark Muegge have offered to donate PNC traps and lures. I just received the first shipment of this donation. We will inform you about this ongoing project in future newsletter issues.

The educational program of the **WESTERN PECAN GROWERS ASSOCIATION CONFERENCE** held in Las Cruces, NM on March 2-4 at the "Hotel Encanto de Las Cruces" had many relevant, practical, and important presentations for the pecan industry. The following pages summarize some of the presentations offered during the conference:

BLACK PECAN APHIDS

Tiffany Johnson (Graduate Student) and Brad Lewis (Graduate Advisor), New Mexico State University, Las Cruces, NM.

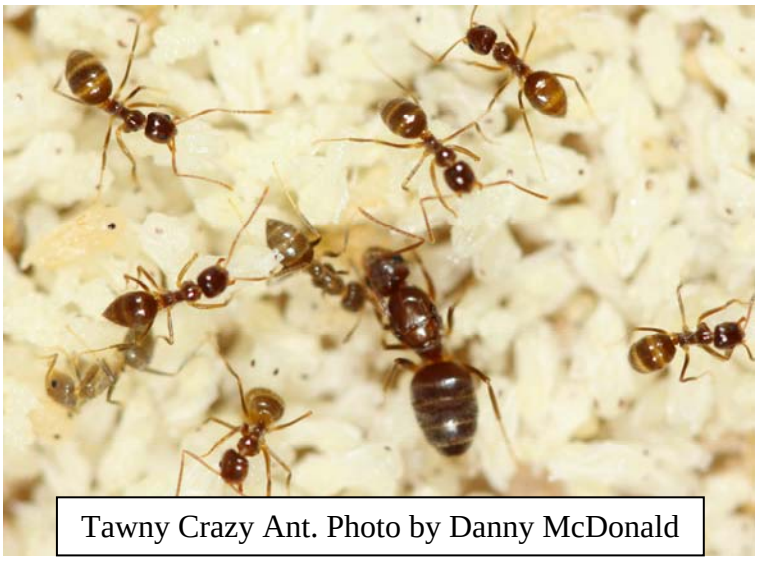
Parasitized blackmargined pecan aphids (BMA) are often confused with black pecan aphids (BPA). The parasitized BMA or aphid mummies are shiny black and adhere to the leaflet. The BPA are dull black in color. **Blackmargined pecan aphids** average 18 reproductive days and 125 nymphs per adult. There are abundant predators that feed on these aphids. BMA are inefficient feeders producing 400% more honeydew than black aphids. Their main plant damage is a large amount of phloem lost and reduced nut fill. On the other hand, **Black pecan aphids** average 10.5 reproductive days and 35 nymphs per adult. They have few predators, are efficient feeders, and their plant damage results in tissue chlorosis/necrosis characterized by angular yellow or brown blotches, photosynthetic loss, and reduced nut fill. BPA prefer feeding on chlorotic foliage. Cottrell et. al. hypothesized that dying tissues increase nutrient availability; especially nitrogen. BPA have faster instar development than BMA. Early season chlorosis may decrease nut fill and result in heavy August nut drop. Late season chlorosis usually results in early defoliation, decreases flower formation in subsequent year, and increases skintights. In general, the action threshold for BPA is of only one aphid per compound leaf. Some of the **factors that influence action thresholds**

include: aphid days (how many and how long), growing season (on year vs. off year), tree height, crop location, aphid location, time of year (late season and natural leaf senescence), and most abundant aphid stages (winged only or nymphs). For instance, in an "off" production year, with BPA occurring in late season, top crop only, and having a late season aphid spike: a threshold of 1.35 aphids per compound leaf seems adequate. However, in an "on" production year, with BPA occurring in early to mid season, crop throughout canopy, and winged aphids that appeared approximately two weeks ago associated with nymph production: a threshold of 0.7 aphids per compound leaf would be more appropriate. **Chemical Control**: Lorsban (chloropyrifos) is arguably the most efficacious treatment: it is highly effective at low rates, relatively inexpensive, both aerial and ground applications result in excellent control, and broad spectrum action may control incidental pests such as Lygus. However, Lorsban provides little or no control of blackmargined aphid (yellow), broad spectrum action may impact beneficial organisms, it is relatively short lived (contact fumigation activity), and is more toxic than other insecticides. **Contact class insecticides**: chlorpyrifos (Lorsban, Whirlwind, others), pyrethroids are not recommended. **Systemic class insecticides**: first generation neonicotinoids used at higher rates, slower action (Admire, Trimax, others), Beleaf, Closer, Movento, and Sivanto. An insecticide efficacy trial conducted in October 2012 that included the following insecticides: Beleaf, Closer, Movento, and Sivanto resulted in a significant reduction in population levels of BPA, one day after application, compared to the untreated check. **Conclusions:** BPA works against tree production on both sides of photosynthesis (live with season long damage). The thresholds are published as one black pecan aphid per compound leaf, but there are situations where this may not be the case. Consideration of other pest species and cost of treatment should be the last priority. Insecticide products that work on one aphid species may not work as well on the others. New insecticide chemistry is available that controls both black pecan aphid and yellow aphid complex.

Black pecan aphid leaf damage symptoms

INVASIVE PESTS: POTENTIAL IMPACTS ON THE WESTERN PECAN INDUSTRY

Bill Ree. Extension Program Specialist - Integrated Pest Management. Texas A&M University AgriLife Extension, Bryan, TX



Tawny Crazy Ant. Photo by Danny McDonald

The following are invasive pests of concern: the brown marmorated stink bug (BMSB), tawny crazy ant, Formosan termite, and Asian ambrosia beetle. Other pest problems in the news include the Asian longhorn beetle, thousand cankers disease (caused by the fungus *Pityophthorus junglandis* vectored by the walnut twig beetle), and Prionus root borers. The BMSB may be confused with the brown stink bug and rough stink bug. The **tawny (aka rasberry) crazy ant** was first found near Pasadena, TX (Houston) in 2002 by Tom Rasberry (pest control operator). It is currently present in 27 Texas counties. It spreads through infested plant material, does

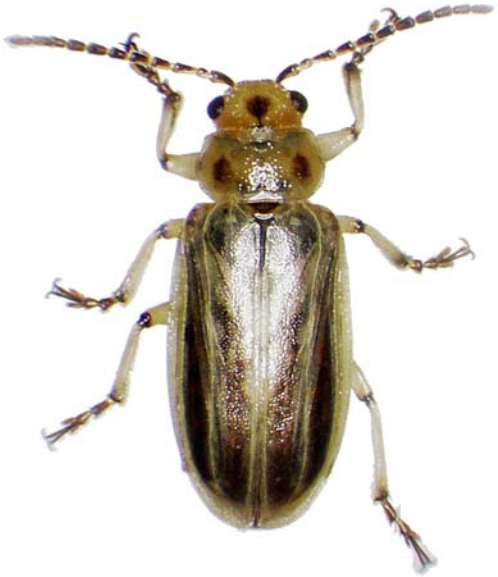
not sting, and does not establish nests in the ground. It has colonies with multiple queens. Although it is considered omnivorous in feeding habits, it is not attracted to ant bait. This ant species has a high fecundity (reproductive rate) and it is known to tend aphids, scale, whiteflies, plant hoppers, and mealybugs for honeydew. This ant may reduce beneficial arthropod populations and may result in increased aphid population levels. It interferes with electrical equipment and may impact labor increasing cost of production.

HERE COME THE SALTCEDAR BEETLES! IMPACT ON THE PECAN INDUSTRY?

Dr. Carol Sutherland. Extension Entomologist and State Entomologist. New Mexico State University/New Mexico Department of Agriculture, Las Cruces, NM.

This critter is **harmless to pecans**. You may see swarms of adult beetles milling around pecan trees, but they are resting, re-orienting themselves and will move along shortly. Saltcedar Tamarisk, or Tamarix is an ornamental, soil stabilizer, and windbreaker, but it is also a competitive invasive exotic plant. They have "salty leaves". These plants form dense, flammable stands and are not wildlife friendly. It was introduced into western U.S. in the late 1800s to early 1900s. It seemed like a good idea at the time, but it escaped cultivation in the west by the 1920s. A large saltcedar plant can absorb 200 gallons of water daily. It is present along our waterways, rings our ponds, lakes, and reservoirs; surviving anywhere they can compete for water. It has been designated as a noxious weed in New Mexico and other states.

Biological control of Saltcedar: Diorhabda insect species (saltcedar leaf beetles) were subjected to multiple screening tests for host specificity: it is Tamarix or death for them! USDA granted approval for the release of these beetles in the U.S about 2005-2006. Adult beetles detect saltcedar, females lay their eggs, larvae and adults defoliate repeatedly, exhausting the saltcedar plants energy reserves, and finally killing them. Beetles are moving on their own in all locations. Not all states have human-assisted relocation activities. To do this requires a federal permit from USDA-APHIS-PPQ with "veto power" from US Fish and Wildlife Service (USFWS). No Permits have been issued in NM since 2008.



Subtropical Tamarisk Beetle

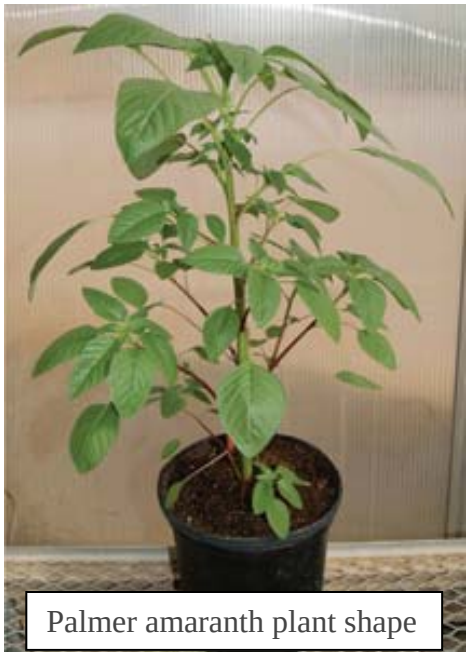
The **Southwestern Willow Flycatcher** (SWWF), *Empidonax traillii extimus*, is an insect eater; which nests in willows near water. The construction of irrigation dams, intensive farming, and increased urbanization has reduced SWWF survival. It is listed as "endangered" in the 1995 endangered species act. Its breeding areas have been designated as critical habitat. The main NM breeding site is the Elephant Butte Resevoir. SWWF nests in saltcedar plants there (few or no willows available) and its fledglings have high mortality rates. The main concern of the USFWS is that Diorhabda beetles will rapidly defoliate saltcedar during flycatcher nesting season. The extreme heat and sunlight exposure may reduce egg viability and expose them to predators.

NMSU efforts in 2013 to update the distribution of Diorhabda beetles resulted in the inclusion of the following counties: Eddy, Chaves, Dona Ana, Valencia, DeBaca, Lincoln, and Otero. These beetle species can and do hybridize. The effects of hybridization must still be determined. Expect population to "cycle" as they do for other species. Beetles are now in an explosive dispersal phase.

What replaces Saltcedar? Nature abhors vacuum… Russian olive? It is another exotic pest that has no known biocontrols for now. Cottonwood and willow? These ones are most desirable. Baccharis, other native shrubs, and grasses? They are better than saltcedar. Saltbush, saltgrass, and other salt-tolerant plant species?

GROWTH AND COMPETITIVE ABILITY OF GLYPHOSATE-RESISTANT PALMER AMARANTH POPULATIONS IN NEW MEXICO

Dr. Jamshid Ashigh, Extension Weed Specialist and Assistant Professor, New Mexico State University, Las Cruces, NM.



Palmer amaranth plant shape

Currently 28 species have evolved resistance to glyphosate worldwide. Resistance has been caused by repeated use of glyphosate. Since 2008, two populations of Palmer amaranth (*Amaranthus palmeri*) from pecan orchards have been confirmed to be resistant to glyphosate in NM. Glyphosate-resistant populations were not resistant to **alternative mode of action herbicides** such as oxyfluorfen (Goaltender, Pindar GT), glufosinate (Rely), carfentrazone (Aim), flumioxazin (Chateau), pendimethalin (Prowl), trifluralin (Treflan), oryzalin (Surflan), etc. These herbicides could serve as effective alternatives for control of glyphosate-resistant Palmer amaranth populations in New Mexico. **Resistance Management practices**: Prevent seed production and introduction, monitor fields, follow label directions, rotate herbicide chemistries, use herbicide mixtures, use less herbicide, and integrate other methods of weed control with herbicides. Susceptible Palmer amaranth populations are more competitive than the glyphosate resistant populations. The use of competitive soil cover vegetation in pecan orchards could reduce the number of resistant plants by minimizing the use of herbicide and imposing a competitive environment that could favor the susceptible populations.

TWENTY YEARS OF SHANK APPLICATION OF FERTILIZERS

Dr. Bill Lindemann, Professor of Soil Science, New Mexico State University, Las Cruces, NM.

Conclusions: High Levels of available phosphorous in fertilized area moved slightly into the 6-12 inch depth and even less into the 12-24 inch depth. Medium Levels of available potassium were found in the fertilized area. There was no effect on pH in clayey soil. Only a slight lowering of pH occurred in sandy soil. There was no effect on salinity or sodium levels. Sodium was a problem on clay loamy soil, particularly between trees where soil was not dug.

MANAGING ALTERNATE BEARING IN PECAN

Dr. Mike Smith, Regents Professor of Pomology, Oklahoma State University, Stillwater, OK.

Provide adequate **cross pollination**. Pecans require pollination by a compatible cultivar. They will not effectively self pollinate. Pollination recommendations: pollinators should be within 150 ft. It is preferable to have two protandrous (cultivars whose male parts or anthers become mature before the female ones or stigma) and two protogynous (pecan cultivars whose female parts become mature before the male ones) types within appropriate pollen shedding/pistil receptivity patterns. **Spring temperatures** affect rate of catkin development more than female flowers. Abnormal temperatures may influence overlapping patterns. Timely **pest management** is important in reducing alternate bearing. Avoid premature defoliation by following recommended IPM practices. Maintain adequate **soil moisture** conditions. Avoid: soil water logging particularly in spring, sites with poor internal drainage, sites that flood, and prolonged flood irrigation especially during leaf expansion. Improve and maintain surface draining. Reduce drought stress by providing adequate supplemental irrigation, keeping vegetation-free zones and mowed sod. Maintain a balanced **fertility program**. Conduct leaf nutrient analysis annually and soil analysis as needed. Banding applications of phosphorous and potassium result in increased availability of those nutrients. Broadcast fertilizer applications are generally ineffective. **Fruit thin excessive crops**. Trunk shakers should be equipped with doughnut pads mounted in a sling. Apply

silicone or grease between the flaps and sling frequently. Fruit thin at 50% to 100% water stage. Allow adequate **sunlight** penetration: thin trees (by tree thinning, pruning, and/or hedging) before lower limbs and fruiting wood are lost. Select **cultivars** with low alternate bearing tendencies. Developing fruit has a minimal impact on return bloom of cultivars with low alternate bearing tendencies unless trees are overloaded. More info: http://okpecans.okstate.edu/ or http://www.hortla.okstate.edu/faculty/smith/index.htm\

VIVIPARY IN PECAN

Dr. Bruce Wood, Research Horticulturist, Southeastern Fruit and Tree Nut Research Lab, USDA Agricultural Research Service, Byron, GA.

Pre harvest sprouting or vivipary in pecan is when the seed (nut) germinates before detachment from the parent plant. The economic impact of vivipary in North America is usually more severe in the lower San Joaquin Valley of California, lower elevations in Arizona, portions of the mid to lower Rio Grande valley of Texas, and lower elevations and arid regions of northern Mexico. But it can be an occasional problem for orchards at many other locations. It potentially occurs in most pecan cultivars if conditions are right.

Factors Affecting Vivipary: its incidence increases with long growing seasons, heavy crop loads, and long periods of time the nuts are in the trees or on the ground before harvesting. It is influenced by environmental factors such as: high night temperatures during the latter stages of kernel filling (yet high temperatures alone do not necessarily lead to vivipary), irrigation, soil characteristics, high blackmargined pecan aphid population levels, pollen source (southern sources being more susceptible than northern ones), and delayed shuck opening or splitting. Vivipary can worsen when trees are well watered during kernel filling, but trees need moist soil in order to have good kernel filling and return flowering. High molecular water level content in kernels favors germination. Vivipary appears to be worse when available soil nitrogen is high during kernel filling. Consider revising late season nitrogen management in sensitive cultivars. Vivipary occurs due to insufficient abscisic acid (ABA) in ripening kernels; which impairs seed dormancy. Low bioavailability of molybdenum, copper, or iron (and possibly manganese, nickel, or zinc) favors vivipary.

Conditions increasing incidence and severity of vivipary: trees with “visible” or hidden hunger. Deficiency of Mo, Cu or Fe (and possibly Zn, Mn and Ni); especially in sandy and alkaline soils. Soils low in Mo. High tissue nitrate during kernel filling (a quasi-hormone that stimulates gibberellic acid synthesis and then germination). High nitrate levels at the time of kernel filling (avoidance of N fertilization during kernel filling). Soils excessively low in phosphorous and/or sulfur may result in excessive nitrate uptake under conditions of high soil nitrate. Heavy crop load can reduce bioavailability of transition metals getting to the kernel. Hedge pruning and mechanical crop-load thinning. Low Potassium nutrition (lower cells turgor, reduces shuck split and increases kernel moisture. High yellow aphid populations that stress the trees during kernel filling. Orchard sites with hot days and warm nights (encourages germination). Sensitive cultivars (i.e., southern cultivars). The usage of ethylene generating chemicals to encourage early shuck opening might also reduce vivipary.

Horticultural practices that minimize vivipary: early harvest using mechanical shakers, avoiding excessive crop-load, selecting varieties with low alternate bearing tendencies adapted to your location, and eliminating tree crowding.

The Texas AgriLife El Paso IPM Program is partially supported by the following organizations:
West Texas Pecan Association
Ag Market Resources
El Paso Pest Management Association
Texas Pest Management Association
Valley Gin Company, Tornillo